

IN THE CLAIMS:

1. (Currently amended) A dust collector comprising:

an upright tubular main body closed at top both ends and bottom;

a tubular partition wall of a reduced diameter concentrically arranged internally of said main body to define a centrally located filtration chamber and an annular cyclone chamber situated outwardly of said filtration chamber, the lower edge of said partition wall terminating upwardly away from the bottom of said main body so that said filtration chamber and said cyclone chamber are in communication ~~communicated~~ with each other at a the lower part thereof; ~~said dust collector further comprising~~

a filter arranged in said filtration chamber and made of a filtration material for collecting submicron size particles; ~~and~~

means for applying vacuum to a the secondary side of said filter; ~~said main body being provided with~~

an air inlet opening tangentially to an the upper part of said cyclone chamber; ~~and~~

a drain opening located at the bottom of the main body thereof;

~~characterized by comprising~~

spray means, provided at the upper part of said cyclone chamber, for forming a film of water flowing down along the inner circumferential surface of said main body and a film of water flowing down along the outer circumferential surface of said partition wall, respectively, to ensure that a swirling stream of air to be treated, drawn through said air inlet into said cyclone chamber, is brought into contact with said water films to

thereby cause airborne dust and particles in the air to be treated to be captured therein and to cause captured dust and particles to be washed away, wherein said spray means directs substantially the entire amount of water supplied thereto onto the inner circumferential surface of said main body and the outer circumferential surface of said partition wall whereby said substantially entire amount of water is consumed in the formation of the water films; and

wherein said air inlet is located below and spaced from said spray means.

2. (Currently amended) A dust collector according to claim 1, wherein said means for forming a film of water comprises an annular water supply means for spraying water toward the uppermost ~~upper~~ part of the inner circumferential surface of said main body and the outer circumferential surface of said partition wall.

3. (Currently Amended) A dust collector according to claim 1 further characterized by ~~characterized by~~ comprising a plurality of flow straightening fins provided between the lower part of said partition wall and said main body to prevent air stream and water flowing down along the inner circumferential surface of said main body and the outer circumferential surface of said partition wall from swirling at the bottom of said cyclone chamber.

4. (Original) A dust collector according to claim 3, wherein said flow straightening fins extend radially and vertically.

5. (Previously presented) A dust collector according to claim 3, wherein each of said

flow straightening fins further comprises a portion that extends along the bottom surface of said main body.

6. (Previously presented) A dust collector according to claim 1, further comprising one or more outwardly open supplemental drain openings provided at the lower part or bottom of said main body.

7. (Currently amended) A dust collector according to claim 2, further characterized by comprising a plurality of flow straightening fins provided between the lower part of said partition wall and said main body to prevent air stream and water flowing down along the inner circumferential surface of said main body and the outer circumferential surface of said partition wall from swirling at the bottom of said cyclone chamber.

8. (Previously presented) A dust collector according to claim 4, wherein each of said flow straightening fins further comprises a portion that extends along the bottom surface of said main body.

9. (Previously presented) A dust collector according to claim 2, further comprising one or more outwardly open supplemental drain openings provided at the lower part or bottom of said main body.

10. (Previously presented) A dust collector according to claim 3, further comprising one or more outwardly open supplemental drain openings provided at the lower part or

bottom of said main body.

11. (Previously presented) A dust collector according to claim 4, further comprising one or more outwardly open supplemental drain openings provided at the lower part or bottom of said main body.

12. (Previously presented) A dust collector according to claim 5, further comprising one or more outwardly open supplemental drain openings provided at the lower part or bottom of said main body.

13. (New) A dust collector according to claim 1 wherein said filter comprises a plurality of tubular filter elements extending in parallel within said filtration chamber.

14. (New) A dust collector according to claim 13 wherein said filter elements each comprise a pleated filter material.

15. (New) A dust collector according to claim 13 wherein said filter elements open into a top space within the top of said main body and further comprising a plurality of backwashing valves mounted within said top space and respectively arranged vertically above openings of the tubular filter elements.

16. (New) A dust collector according to claim 13 wherein said spray means is an annular member with a plurality of nozzles which spray the water horizontally onto the

inner circumferential surface of said main body and onto the outer circumferential surface of said partition wall.

17. (New) A dust collector according to claim 1 wherein said spray means is an annular member with a plurality of nozzles which spray the water horizontally onto the inner circumferential surface of said main body and onto the outer circumferential surface of said partition wall.

18. (New) A dust collector according to claim 1 wherein said filter is dry.

19. (New) A dust collector according to claim 13 wherein said filter is dry.

20. (New) A dust collector according to claim 17 wherein said filter is dry.